



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/632,352

08/01/2003

Will Watson

DKT91043H

3974

70889

7590

04/25/2008

Borg Warner/BHGL  
P.O. Box 10395  
Chicago, IL 60610

EXAMINER

VANAMAN, FRANK BENNETT

ART UNIT

PAPER NUMBER

3618

MAIL DATE

DELIVERY MODE

04/25/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/632,352	<b>Applicant(s)</b> WATSON ET AL.	
	<b>Examiner</b> Frank B. Vanaman	<b>Art Unit</b> 3618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 19 February 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 108-127 and 129-144 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 108-113, 115, 116, 118-127, 130-135 and 137-144 is/are rejected.
- 7) ☒ Claim(s) 114, 117, 129, 136 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

***Status of Application***

1. Applicant's amendment of Nov 1, 2007 and further comments of Feb 19, 2008 have been entered in the application. Claims 108-127 and 129-144 are pending, with claims 1-107 and 128 being canceled.

***Claim Objections***

2. Claim 125 is objected to because of the following informalities: in claim 125, line 3, "times intervals" should be --time intervals--. Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

3. Claims 142 and 144 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 142, the recitation of the predetermined value and another predetermined value being the same appears to be redundant, since it appears as though both predetermined values would be understood to be the same. In claim 144, the recitation that the amounts "may vary are equal" is confusing - in this case, the examiner is assuming that the recitation is intended to be alternative.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 108-110, 113, 115, 116, 118-122, 125-127, 130-135, 137, 138 and 141-143 are rejected under 35 U.S.C. 102(b) as being anticipated by Miller et al. (US 4,989,686, cited previously and long of record). Miller et al. teach a vehicle having a first drive line with a first drive shaft (42) a first differential (56), first axles (18) and first wheels (14), as well as a second drive line having a second drive shaft (44) a second

Art Unit: 3618

differential (66) second axles (16) and second wheels (12); each line having at least one average speed sensor (104, 102) to determine a drive line speed, each drive line speed being an average speed of the two wheels associated with the drive line; a transfer case having an input (41) connectable to one or both of two outputs (e.g., shafts 42, 44) and a friction pack clutch (46) having interleaved discs (see figure 3), and including a ball ramp actuator (see figure 4) operatively disposed between the first and second outputs and actuated by a coil (70) driven electrically by a microcomputer controller (100) which receives speed signals from the drive line speed sensors (102, 104), determines the difference between the speed signals (col. 8, lines 53-55) wherein the speed difference as a matter of the course of operating the vehicle varies (figure 12, 13) or may remain constant; wherein the controller causes an increase of electrical current to the clutch in response to the difference in speed signals exceeding a computed predetermined threshold value (col. 8, line 64 through col. 9, line 24, also note the graphical representation for example in figures 12 and 13) with respect to the predetermined set-point value which remains the same over time if vehicle conditions do not change, or increases, or decreases (see col. 9, lines 4-24 and 42-45 col. 14, lines 22-27; col. 15, lines 8-12, etc) depending on vehicle operation conditions; the controller causing continuing step-wise increases of the current in response to the difference remaining greater than the threshold (col. 9, lines 28-65; note as well at col. 11, lines 58-62 and col. 13, lines 43-50); decreasing the current in response to the difference being less than the threshold ('return time', figure 9), such that at least a minimum electrical value, and thus a minimum torque value, is set in the clutch (i.e., at the time when the lowest value is commanded of the clutch - also note that this value may be zero, applicant's recitation, for example at claim 116, does not preclude such an interpretation, however), the clutch being engaged to at least that minimum level, or to a higher level, applied as set by the torque level output, which level is set by calculation and delivered to the clutch based on at least the throttle opening and engine speed (col. 10, lines 45-54).

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 111, 112, 123, 124, 139, 140 and 144 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller et al.

As regards claims 111, 112, 123, 139, 140 and 144 the reference to Miller et al. fails to explicitly teach the steps of engagement as being equal in value. In output devices commonly used with microcomputers (e.g., D/A converters), and which are used to output digital data derived from a computing device to an analog device, it is exceptionally well known to provide each increment of resolution of the converter to be of equal value, and it would have been obvious to one of ordinary skill in the art at the time of the invention to provide each step level to be equal in value to the others for the purpose of allowing the use of the commonly available converters, thus reducing cost.

As regards claim 124, the reference to Miller et al. fails to explicitly teach the steps being equal in duration. It is very well known to operate a microcomputer program in a cyclic manner (i.e., a loop) which runs a set of instructions repeatedly, taking the same time for each running of the loop. As such, it would have been obvious to one of ordinary skill in the art at the time of the invention to increment and decrement the steps such that they are of equal duration (i.e., each with the same number of loop steps) so as not to require additional program steps to implement variable durations.

***Allowable Subject Matter***

8. Claims 114, 117, 129 and 136 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Response to Comments***

9. Applicant's comments, filed with the amendment, have been carefully considered. Applicant has asserted that the claims as newly recited are expected to overcome the rejections set forth previously under 35 USC §112, first paragraph. In this case, the examiner agrees, however it appears as though applicant has re-written a large proportion of the claims so that they are again anticipated by, or obvious over the previously applied (and long of record) reference to Miller et al. Applicant notes that the instant invention operates in a cyclical manner and the examiner notes that the arrangement taught by Miller et al. (See col. 13, lines 55-61) does as well. Similarly in both Miller et al. and the instant invention, the vehicle is expected to operate under conditions where driving conditions, and thus slip values change, and wherein predetermined thresholds based on vehicle speed and/or throttle opening and/or steering angle also change in view of the changes in the operating conditions of the vehicle.

***Conclusion***

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Art Unit: 3618

11. Any inquiry specifically concerning this communication or earlier communications from the examiner should be directed to F. Vanaman whose telephone number is 571-272-6701.

Any inquiries of a general nature or relating to the status of this application may be made through either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A response to this action should be mailed to:

Mail Stop \_\_\_\_\_  
Commissioner for Patents  
P. O. Box 1450  
Alexandria, VA 22313-1450,

Or faxed to:

PTO Central Fax: 571-273-8300

**F. VANAMAN**  
**Primary Examiner**  
**Art Unit 3618**

/Frank B Vanaman/  
Primary Examiner, Art Unit 3618